



Learning SQL from Scratch

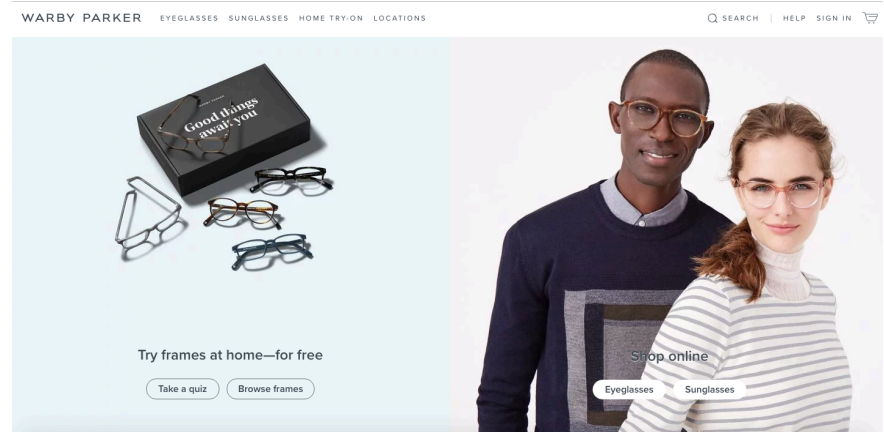
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Warby Parker's Online Customer Experience

- Their vision: Offer designer eyewear at a revolutionary price while leading the way for socially conscious businesses
- Direct-to-consumer: both physical and online retail
- Online customer experience involves three stages: **Style Quiz, Home Try-On and Purchase**
- **Focus of this analysis would be on WP's quiz funnel, as well as their home try-on funnel**



The Style Quiz

- Used to recommend glasses to user
- Involves five Questions: Style, Fit, Shape and Color of Glasses, also a question about last eye exam
- Responses are recorded in the Survey table with columns for: the question asked, the user's id code, as well as his/her response to the question (i.e. one user can have multiple rows)
- However, some users will choose to exit the quiz!

```
-- 1. Familiarizing with survey table
select *
from survey
limit 10;
```

question	user_id	response
1. What are you looking for?	005e7f99-d48c-4fce-b605-10506c85aaf7	Women's Styles
2. What's your fit?	005e7f99-d48c-4fce-b605-10506c85aaf7	Medium
3. Which shapes do you like?	00a556ed-f13e-4c67-8704-27e3573684cd	Round
4. Which colors do you like?	00a556ed-f13e-4c67-8704-27e3573684cd	Two-Tone
1. What are you looking for?	00a556ed-f13e-4c67-8704-27e3573684cd	I'm not sure. Let's skip it.
2. What's your fit?	00a556ed-f13e-4c67-8704-27e3573684cd	Narrow
5. When was your last eye exam?	00a556ed-f13e-4c67-8704-27e3573684cd	<1 Year
3. Which shapes do you like?	00bf9d63-0999-43a3-9e5b-9c372e6890d2	Square
5. When was your last eye exam?	00bf9d63-0999-43a3-9e5b-9c372e6890d2	<1 Year
2. What's your fit?	00bf9d63-0999-43a3-9e5b-9c372e6890d2	Medium

The Style Quiz (cont.)

- Analyzing when the user decides to exit the quiz is interesting, as it allows WP insight into which questions could possibly deter customers, which may result to a loss in sale
- We find that out of the sample of 500 people available in our data, only about half actually make it through the entire quiz
- To complement this data, we also calculated completion rates for each question that are based on the number of people that has completed the previous question

```
-- 2. Determining number of responses  
for each question  
select question, count(*)  
from survey  
group by question;
```

question	count(*)
1. What are you looking for?	500
2. What's your fit?	475
3. Which shapes do you like?	380
4. Which colors do you like?	361
5. When was your last eye exam?	270

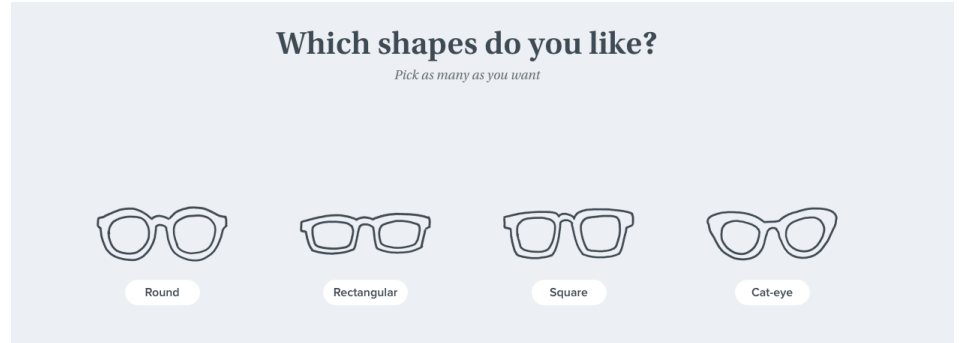
The Style Quiz (cont.)

- We find that there is a **persistent drop** in the number of users remaining as we progress through the quiz
- The most drastic of these drops are seen as we move from question 2 to 3 (a 15 % drop in the number of users), and moving from question 4 to 5 (a ~20% drop in the number of users)

Question Number	Percent Completing this Question
1	100.00%
2	95.00%
3	80.00%
4	95.00%
5	74.79%

The Style Quiz (cont.)

- With regards to question 3, which is about the shape of glasses the user prefers, users might decide to exit because there isn't really a clear difference between the glasses, as represented by graphics (shown to the right), leading them to be confused
- With regards to question 5, the user might decide to leave because he/she doesn't remember the last time he/she had an eye exam. Another reason might be because he/she isn't comfortable revealing when he/she has had an eye exam.



Home Try-Ons: A/B Test

- As previously mentioned, the three stages than an online customer follows is **Style Quiz**, **Home Try-On** and **Purchase**
- Three tables corresponding to each step are shown to the right, respectively from top to bottom

user_id	style	fit	shape	color
4e8118dc-bb3d-49bf-85fc-cca8d83232ac	Women's Styles	Medium	Rectangular	Tortoise
291f1cca-e507-48be-b063-002b14906468	Women's Styles	Narrow	Round	Black
75122300-0736-4087-b6d8-c0c5373a1a04	Women's Styles	Wide	Rectangular	Two-Tone
75bc6ebd-40cd-4e1d-a301-27ddd93b12e2	Women's Styles	Narrow	Square	Two-Tone
ce965c4d-7a2b-4db6-9847-601747fa7812	Women's Styles	Wide	Rectangular	Black

user_id	number_of_pairs	address
d8add87-3217-4429-9a01-d56d68111da7	5 pairs	145 New York 9a
f52b07c8-abe4-4f4a-9d39-ba9fc9a184cc	5 pairs	383 Madison Ave
8ba0d2d5-1a31-403e-9fa5-79540f8477f9	5 pairs	287 Pell St
4e71850e-8bbf-4e6b-acc-49a7bb46c586	3 pairs	347 Madison Square N
3bc8f97f-2336-4dab-bd86-e391609dab97	5 pairs	182 Cornelia St

user_id	product_id	style	model_name	color	price
00a9dd17-36c8-430c-9d76-df49d4197dcf	8	Women's Styles	Lucy	Jet Black	150
00e15fe0-c86f-4818-9c63-3422211baa97	7	Women's Styles	Lucy	Elderflower Crystal	150
017506f7-aba1-4b9d-8b7b-f4426e71b8ca	4	Men's Styles	Dawes	Jet Black	150
0176bfb3-9c51-4b1c-b593-87edab3c54cb	10	Women's Styles	Eugene Narrow	Rosewood Tortoise	95
01fdf106-f73c-4d3f-a036-2f3e2ab1ce06	8	Women's Styles	Lucy	Jet Black	150

Feedback



Home Try-Ons: A/B Test

- WP has decided to conduct an A/B test in which they give either 3 or 5 pairs of glasses to its customers for a home try-on
- Here, we assume the controlled group gets 3 pairs, while the variant group gets 5 pairs
- **We find that the group that gets 5 pairs are more likely to purchase a pair of glasses**

ab_test_group	percentage_purchase
control	0.53
variant	0.79

```
with a_b_test as
(select q.user_id, h.number_of_pairs,
 h.user_id is not null as is_checkout,
 p.user_id is not null as is_purchase,
 case
   when h.number_of_pairs = '3 pairs'
 then      'control'
   when h.number_of_pairs = '5 pairs'
 then      'variant'
   else null
 end as ab_test_group
 from quiz as 'q'
 left join home_try_on as 'h'
   on q.user_id = h.user_id
 left join purchase as 'p'
   on q.user_id = p.user_id)
select ab_test_group,
round(1.0*sum(is_purchase)/count(user_
id),2) as percentage_purchase
from a_b_test
where ab_test_group is not null
group by ab_test_group;
```

Three Steps in one Table

Based on the three main steps discussed, we combine the tables corresponding to these steps in order to glean more actionable insights for WP

```
select q.user_id, h.number_of_pairs,  
       h.user_id is not null as is_home_try_on,  
       p.user_id is not null as is_purchase  
from quiz as 'q'  
left join home_try_on as 'h'  
  on q.user_id = h.user_id  
left join purchase as 'p'  
  on q.user_id = p.user_id  
limit 10;
```

user_id	number_of_pairs	is_home_try_on	is_purchase
4e8118dc-bb3d-49bf-85fc-cca8d83232ac	3 pairs	1	0
291f1cca-e507-48be-b063-002b14906468	3 pairs	1	1
75122300-0736-4087-b6d8-c0c5373a1a04	Ø	0	0
75bc6ebd-40cd-4e1d-a301-27ddd93b12e2	5 pairs	1	0
ce965c4d-7a2b-4db6-9847-601747fa7812	3 pairs	1	1
28867d12-27a6-4e6a-a5fb-8bb5440117ae	5 pairs	1	1
5a7a7e13-fbcf-46e4-9093-79799649d6c5	Ø	0	0
0143cb8b-bb81-4916-9750-ce956c9f9bd9	Ø	0	0
a4ccc1b3-cbb6-449c-b7a5-03af42c97433	5 pairs	1	0
b1dded76-cd60-4222-82cb-f6d464104298	3 pairs	1	0

Feedback



Additional Insights

- Starting from a higher-level perspective on WP's data, I am interested to see which styles are most popular for new customers
- We find that there is an even interest between Men's and Women's styles, although there are also a significant amount of customers that are indifferent between the two styles
- Recommendation: WP should make new change this categorization so that those who are indifferent don't lose a "data point" with regards to the input required for WP to make a good recommendation

```
select style, count(*)  
from quiz  
group by style;
```

style	count(*)
I'm not sure. Let's skip it.	99
Men's Styles	432
Women's Styles	469

Additional Insights (cont.)

- I am also interested in the most popular styles and prices that are purchased
- We find that the two most popular categories are Men's Styles that are at \$150 and Women's Styles that are at \$95
- Recommendation; WP should think about making more of these types of glasses

```
select style, price,  
       count(*) as total_purchased  
from purchase  
group by style, price;
```

style	price	total_purchased
Men's Styles	50	41
Men's Styles	95	95
Men's Styles	150	107
Women's Styles	95	166
Women's Styles	150	86

Additional Insights (cont.)

- We also find that in the process of moving between stages, 75% of customers make it from taking a quiz to doing an at home try-on, and 66% of customers make it from an at home try-on to making an actual purchase

num_quizzed	num_home_try_on	num_purchase	percent_q2h	percent_h2p
1000	750	495	0.75	0.66

```
with warby_funnel as (  
  select q.user_id, h.number_of_pairs,  
         h.user_id is not null as 'is_home_try_on',  
         p.user_id is not null as 'is_purchase'  
  from quiz as 'q'  
  left join home_try_on as 'h'  
    on q.user_id = h.user_id  
  left join purchase as 'p'  
    on q.user_id = p.user_id )  
select count(user_id) as 'num_quizzed',  
       sum(is_home_try_on) as 'num_home_try_on',  
       sum(is_purchase) as 'num_purchase',  
       1.0 * SUM(is_home_try_on) / COUNT(user_id)  
       as 'percent_q2h',  
       1.0 * SUM(is_purchase) / SUM(is_home_try_on)  
       as 'percent_h2p'  
from warby_funnel;
```

Additional Insights (cont.)

- We also find that users who don't have a preference between Men and Women Styles during the quiz will end up not purchasing a pair of glasses
- Recommendation: WP should make new change this categorization, so that it doesn't lose sales due to confused customers

```
with idk_style as (  
  select q.user_id,  
         q.style as initial_style,  
         h.user_id is not null as is_home_try_on,  
         p.user_id is not null as is_purchase  
  from quiz as 'q'  
  left join home_try_on as 'h'  
    on q.user_id = h.user_id  
  left join purchase as 'p'  
    on q.user_id = p.user_id )  
select  
  round(1.0*sum(is_home_try_on)/count(user_id),2) as  
  percentage_tryathome,  
  round(1.0*sum(is_purchase)/count(user_id),2)  
  as percentage_purchased  
from idk_style  
where initial_style = "I'm not sure. Let's skip it.";
```

percentage_tryathome	percentage_purchased
0.7	0.0

